

# High-Precision Measurement of the Static Dipole Polarizability of Cs with a Cold Atom Fountain

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We direct a fountain of laser-cooled Cs atoms into a static perpendicular electric field,  $E$ , and measure the increase in flight time, due to the acceleration of the atoms into the field, as a function of electric field [1]. The change in potential energy,  $W$ , equals the change in kinetic energy, where  $W = -1/2 \alpha E^2$ , and  $\alpha$  is the polarizability. Our result is  $\alpha = \text{xxxxx (xx)}$  which makes this the most precise condensable atom polarizability yet measured. It is in agreement with Derevianko et. al [2].

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[1] J.A. Maddi, T.P. Dinneen, and H. Gould, Phys. Rev A60, 3882 (1999).

[2] A. Derevianko, W.R. Johnson, M.S. Safronova, and J.F. Babb, Phys. Rev. Lett. 82, 3589 (1999)